Quadratics (7) Simplifying Algebraic

Do now

Factorise $x^2 - 7x - 60$	Factorise $x^2 + 10x + 25$
Factorise $x^2 - 16$	Factorise $12x^2 - 300$
Solve by factorising $x^2 + 5x - 14 = 0$	Solve by factorising $x^2 + 6x + 9 = 0$

Quadratics (7) Simplifying Algebraic

Factorise $x^2 - 7x - 60$ $(x - 12)(x + 5)$	Factorise $x^2 + 10x + 25$ $(x + 5)^2$
Factorise $x^2 - 16$ $(x + 4)(x - 4)$	Factorise $12x^2 - 300$ $12(x^2 - 25)$ $12(x + 5)(x - 5)$

Solve by factorising $x^2 + 5x - 14 = 0$ $(x + 7)(x - 2) = 0$ $x + 7 = 0$ or $x - 2 = 0$ $x = -7$ $x = 2$	Solve by factorising $x^2 + 6x + 9 = 0$ $(x + 3)^2 = 0$ $x = -3$

Worked Example	Your Turn
Simplify:	Simplify:

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1.

2.

3.

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13.

14.

15.

16.

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Worked Example	Your Turn

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1.

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12.

13.

14.

Extensions

1. $\frac{x^3-x}{x^2+xy+x+y}$

2. Find an expression for the gradient of the line joining the point A (-5,25) to point B (6p, $36p^2$)

3. Work out the value of r when S = 10a

$$S = \frac{a}{1-r}$$

4. I can run a fixed length race in two hours at a speed of $x^2 - 1$mph. If I run at $x + 1$mph, how long will it take. Give your answer in terms of x in the simplest form.

Extensions

1. $\frac{x^3-x}{x^2+xy+x+y} = \frac{x(x^2-1)}{x(x+y)+1(x+y)} = \frac{x\cancel{(x+1)}(x-1)}{\cancel{(x+1)}(x+y)} = \frac{x(x-1)}{x+y}$

2. Find an expression for the gradient of the line joining the point A (-5,25) to point B (6p, 36p^2)

$m = \frac{36p^2-25}{6p--5} = \frac{(6p-5)\cancel{(6p+5)}}{\cancel{6p+5}} = 6p-5$

3. Work out the value of r when S = 10a

$$S = \frac{a}{1-r}$$

$10a = \frac{a}{1-r}$ $\quad 1-r = \frac{a}{10a}$ $\quad r = 1-\frac{1}{10}$

$r = 0.9$

4. I can run a fixed length race in two hours at a speed of x^2-1mph. If I run at $x+1$mph, how long will it take. Give your answer in terms of x in the simplest form.

$s = \frac{d}{t} \rightarrow d = st \rightarrow d = 2(x^2-1) \longrightarrow s = \frac{d}{t} \quad t = \frac{d}{s}$

$t = \frac{2(x^2-1)}{x+1} = 2(x-1)$